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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/616,058 | 07/09/2003 | James Richardson Lattner | 97B049-4 | 9531 |

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EXAMINER

NECKEL, ALEXA DOROSHENK

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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1764

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/616,058

Applicant(s)

LATTNER ET AL.

Examiner

Alexa D. Neckel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 39-43, 46 and 47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8/31/05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 31, 2005 has been entered.

Drawings

2. The drawings were received on August 31, 2005. These drawings are acceptable.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 39-43, 46 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schwarzenbek (4,090,948) in view of Owen et al. (5,328,593) and further in view of Wegerer et al. (5,451,313).

With respect to claim 39, Schwarzenbek discloses an FCC apparatus comprising:

a riser reactor (1/2) having a first end (1) and a second end (near 15);

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the first end (1) of the riser having a feed inlet (32);

the second end (near 15) having a diameter greater than that of the first end (1) (see figure 1) and the riser having a vapor velocity of 5 to 60 ft/sec or 1.524 to 18.288 m/sec (col. 10, lines 8-10);

the second end (near 15) being connected to a disengaging zone (3);

the disengaging zone (3) having a first catalyst discharge line (8) and a second catalyst discharge line (5) in communication with a regenerator (6);

said regenerator having an inlet for regeneration medium (23, 24) and an outlet for catalyst (7);

the first catalyst discharge line (8) and the outlet of the regenerator (7) are in fluid communication with the first end of the riser (1).

Schwarzenbek fails to disclose wherein the second end of the riser is externally connected to a disengaging zone since the second riser end is internal to the disengaging zone.

Owen et al. also discloses an FCC apparatus comprising a riser reactor (6) wherein the diameter of the second end (near 10) is greater than the first end (near 2), the second end is connected to a disengaging zone (17) and the disengaging zone feeds catalyst to a regenerator (24) which feeds catalyst to the riser (via 32). In the apparatus of Owen et al. the disengaging vessel is connected externally to the riser reactor and Owen et al. teaches that such a design achieves some efficiencies because of the location of the stripper's location directly over the regenerator (col. 2, lines 5-11). It would have been obvious to one of ordinary skill in the art at the time the invention

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was made to externally attach the second end of Schwarzenbek's riser to the disengaging vessel in order to gain efficiencies in the catalyst regeneration steps, as taught by Owen et al.

Schwarzenbek also fails to disclose wherein a catalyst cooler is in communication with the regenerator.

Owen et al. also teaches a catalyst cooler (28) in communication with the regenerator (24) in order to remove heat from the regenerator (col. 5, lines 17-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a catalyst cooler to the regenerator of Schwarzenbek in order to remove heat from the regenerator, as taught by Owen et al. and further control the process.

Schwarzenbek, as modified by Owen et al., discloses an external cooler (Owen, 28) which recycles catalyst back to the regenerator, but fails to disclose where the cooler also has a line which is coupled to the first catalyst discharge line (from the disengaging zone).

Wegerer et al. also teaches an FCC apparatus with a reactor riser (16), disengaging zone (10) with two catalyst outlets, one (42) to a regeneration zone (12) and the other (22) to the first end of the riser. Wegerer et al. also teaches having an external catalyst cooler for heat recovery from the regenerator wherein the catalyst can return to the regenerator and/or return to the first end of the riser (blending zone) (col. 14, lines 3-18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to also provide the catalyst cooler outlet to the riser in the

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modified apparatus of Schwarzenbek in order to improve the efficiency of the apparatus, as taught by Wegerer et al.

With respect to claim 40, Schwarzenbek further discloses wherein the disengaging zone comprises at least one cyclone (10).

With respect to claim 41, Schwarzenbek further discloses wherein the cyclone separator has a catalyst discharge end (16) and a product discharge end (not numbered) which is in fluid communication with a product outlet line (17) at a second end of the disengaging zone (3).

With respect to claim 42, Schwarzenbek further discloses wherein the disengaging zone (3) is in fluid communication with a stripping zone (4) and the second catalyst discharge line (5) is located below the stripping zone (4).

With respect to claim 43, Schwarzenbek further illustrates wherein the stripping zone (4) is located within the disengaging zone (3).

With respect to claims 46 and 47, Schwarzenbek discloses a second feed inlet (33) located at the second end or between the second end (near 15) and the first end (1) of the riser.

Response to Arguments

Drawings

The objection to the drawings is withdrawn to due to applicant's amendment to figure 1.

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35 USC 103(a)

Applicant argues that Wegerer does not disclose a catalyst cooler which has two discharge lines, to the regenerator and one to the first catalyst discharge line of the disengaging zone.

The examiner respectfully disagrees. While Wegerer does not illustrate the catalyst cooler in a figure, Wegerer does state (col. 13, lines 3-18) that where a catalyst cooler is used, it "will typically receive catalyst from and return catalyst to the regenerator side of the process" and that "catalyst entering the blending vessel may also circulate through a heat exchanger" and be returned to the blending zone. In this case, the blending zone is also the location where the first catalyst discharge line from the disengaging zone connects to the riser. As such, it is contemplated by Wegerer that a catalyst cooler can be employed and that the cooler can be connected to both the regenerator vessel and the blending zone.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexa D. Neckel whose telephone number is 571-272-1446. The examiner can normally be reached on Monday - Thursday from 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Alexa D. Neckel
Examiner
Art Unit 1764

September 15, 2005

Alexa D. Neckel
ALEXA DOROSHENK NECKEL
PRIMARY EXAMINER